

MISSILE DEFENSE STRATEGIC STATIONING

BY

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USAWC STRATEGY RESEARCH PROJECT

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ABSTRACT

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Although the Army has conceptual plans and requirements for the development of new air and missile defense capabilities, specifically THAAD and JLENS, the Army has not defined a strategic employment / deployment plan to meet Combatant Commanders' demands. Throughout the 1990s, the Army deployed PATRIOT task forces to Southwest Asia and South Korea with little overarching strategic planning balanced against competing and evolving demands for missile defense capabilities. The constant deployments had an adverse impact on the AMD force from personnel, training, and operational readiness perspectives. This caused the Army to reevaluate its employment plan to sustain operational demand without breaking the AMD force. The Army used the Army Force Generation (ARFORGEN) model with 1:2 dwell time as means to sustain operational commitments. Combatant Commanders' immediate demand for THAAD and JLENS, as they come off the production lines and lack of a clear stationing plan, could lead to a repeat of the 90's challenges. This paper posits that a strategic stationing plan for THAAD and JLENS must be developed concurrent with acquisition of new air and missile defense capabilities. It recommends specific means to employ these new capabilities without adversely impacting the AMD force.

MISSILE DEFENSE STRATEGIC STATIONING

The protection of the United States from the threat of ballistic missile attack is a critical national security priority. The threat to our deployed forces and to our allies and partners is growing rapidly. This threat has significant implications for our ability to project power abroad, to prevent and deter future conflicts, and to prevail should deterrence fail.¹

—Robert M. Gates
Secretary of Defense

Today's Missile Defense

The 21st century illuminated a new paradigm where our adversaries needed to find means to counter the United States' technological advantages with their own asymmetric measures. Within the air domain, our adversaries' inability to match U.S. air superiority caused a ripple effect within the armed forces. Short range air defenses were no longer necessary after the demise of the Soviet Union. With burgeoning budget demands to reshape the Army as a contingency based force, lighter and more flexible, the Army chose to remove short range air defense capabilities such as the Bradley Stinger Fighting Vehicles, Avengers, and MANPAD Stingers from the Army's force structure. These cuts provided the manning required for additional Brigade Combat Teams and fill divisions to 100% strength. The secondary effect was the Army chose to accept risk to the force against adversaries with air and missile attack capabilities, using deterrence as the means to hold in check nations with capable air and ballistic missile forces such as China, Russia, North Korea, and Iran.

Our adversaries chose other means to counter U.S. dominance in the air domain through ballistic missiles (mainly short, medium and intermediate range missiles), unmanned aerial systems, cruise missiles, and rockets, artillery, and mortars (RAM).

To counter our adversaries, the Army's air and missile defense capabilities development focused on continued improvements to PATRIOT missile battalions, Sentinel radars, and new systems such as Terminal High Altitude Area Defense (THAAD) to provide longer range missile defense against more complex ballistic missiles in the terminal phase. Additionally, the Army has developed the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) as a critical air and missile defense enabler, in the form of surveillance and fire control radars that provide 360 degree sensor coverage with an incredible downward looking visual cueing aspect. This provides the Combatant Commanders capabilities to defend more forces within an expanded battlespace against more advanced and complex target sets at much greater ranges.

From the end of Operation DESERT STORM into the mid-1990s, Air and Missiles Defense (AMD) forces, mainly PATRIOT battalions and critical AMD sensors, were deployed to the Republic of Korea, Japan, Germany, and Southwest Asia. As the Department of Defense (DoD) implements the Phased Adaptive Approach (PAA) advocated by the Missile Defense Agency (MDA), the Army will deploy PATRIOT batteries to Poland and potentially Israel as part of an expanding missile defense shield to protect U.S. forces in Europe and our NATO allies against an evolving Iranian ballistic missile threat. This is a commitment of seven battalions out of fifteen, or 47% of the Army's total inventory. The forces in SWA and Korea, two battalion in each theater, are currently rotational, requiring CONUS-based PATRIOT battalions committed to sustain these missions over time. Using an ARFORGEN ratio of 1:2 dwell time, this means an additional eight battalions are training for a future deployment into theater, committing 87% of PATRIOT units to current deterrence missions as part of the DoD strategy of

forward presence. This leaves only two battalions for contingency operations and support to Combatant Commands' requirements. This has left little capacity in times of crisis. The Army's development and fielding of THAAD will offset some of this capacity, however THAAD is designed for more advanced ballistic missiles and will be employed specifically to counter that threat set, leaving PATRIOT responsible for short and medium range ballistic missiles (BMs).

This paper's scope centers on air and missile defense against regional threats, and not national missile defense capabilities such as the Ground-Based Interceptor (GBI) as part of the Global Missile Defense (GMD) system. The Global Missile Defense system is an evolving deterrence capability design to counter Intercontinental Ballistic Missiles (ICBMs). GMD is on track for full development by the Missile Defense Agency (MDA) and deployment under United States Strategic Command and Northern Command; therefore is not considered in this analysis. Specifically, this paper addresses the employment / deployment issues for the Army's two newest capabilities, Terminal High Altitude Area Defense (THAAD) and Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) in support of the primary users of air and missile defense capabilities: the European Command (EUCOM), Pacific Command (PACOM) and Central Command (CENTCOM).

The United States Army is beginning to field two critical air and missile defense capabilities (THAAD and JLENS) and has not completed analysis to decide how and where to employ these capabilities. Combatant Command requirements already exceed the limited numbers the Army plans to procure and field. This creates a gap for which the Army must plan to accommodate the demand without degrading AMD forces

in terms of operation, training, and personnel. Hence, the Army must decide where best to employ these systems able to anticipate adversarial intentions and protect crucial Joint forces from air and missile attacks. As such this paper tackles the following questions: What employment means are used to balance the demand requirements with health of the air and missile defense force? Can the Army sustain long-term deployment of critical missile defense systems? Are there alternate means to achieve strategic deterrent effects required by the COCOMs? Most importantly, should the Army consider a balanced approach of rotational, contingency based, and forward stationed forces as a means to achieve sustained deterrence with minimal impact to the AMD force?

Background

The National Security Strategy, Quadrennial Defense Review, and National Military Strategy define Deter and Defeat Aggression as a primary national military objective.² Regional actors, such as North Korea in Northeast Asia and Iran and Syria in the Middle East, have short (SRBM), medium (MRBM), and intermediate (IRBM) range ballistic missiles that threaten U.S. forces, allies, and partners in regions where the United States deploys forces and maintains security relationships.³ Iran, with assistance from North Korea, China, and Russia, has increased its ballistic missile capability to threaten not only the Middle East, but with its Shahab-3 MRBM, can also range Eastern Europe. These countries continue extensive missile development programs aimed to increase range and effectiveness and designed to intimidate their regional neighbors. Syria, with its antiquated yet mobile SCUD-class and SS-21 SRBMs, threatens Israel, Jordan, Turkey and Iraq. China already possesses the full

range of ballistic missiles and is developing advanced precision missiles with the potential to strike moving targets such as aircraft carriers.

The growing development in range and accuracy presents a real challenge to policy makers as they wrestle with means to defend against these lethal weapons. The 2011 National Military Strategy (NMS) defines that “we must also maintain a robust conventional deterrent. Deterrence and assurance requires the ability to rapidly and globally project power in all domains. In turn our force posture – both rotational and forward based – shall be geographically distributed, operationally resilient, and politically sustainable through visible partnering efforts.”⁴ As new AMD capabilities roll off the production lines in 2011, policy makers need to determine the correct mix of forward based or rotational AMD capabilities to achieve the deterrence effect desired and counter growing threats. Thus U.S. missile defense is crucial in conjunction with our allies and partners to strengthen regional deterrence and prepare for potential adversaries who seek to destabilize their regions.⁵

The Joint Force, mainly the Navy, augments the Army with AMD capability with its AEGIS-equipped Ballistic Missile Defense (BMD) cruisers and destroyers. These forces are always rotational and not necessarily dedicated to AMD/BMD missions for the Joint Force Commander (JFC). The Navy’s Standard Missile-3 (SM3) is an exo-atmospheric interceptor designed to defeat advanced medium and intermediate range BMs. The Navy has begun work on the Standard Missile-6 (SM6), which will be used for air defense for a Carrier Strike Group (CSG) as well as short range ballistic missile defense. Additionally, the Missile Defense Agency (MDA) plans to develop Phased Adaptive Approaches (PAAs) as part of the NMS that uses land-based SM3 capabilities

along with Army Navy / Transportable Radar Surveillance (AN/TPY-2) radars to augment current Combatant Commanders' demand for more missile defense capability. MDA's first PAA will be in Europe to counter the growing threat from Iran. The United States Air Force (USAF) is another key player in AMD as they provide the critical command and control facilities with their Air Operations Centers (AOCs) forward based in Europe, Qatar, South Korea, Japan, and Hawaii. They also operate a vast array of intelligence, surveillance, and reconnaissance capabilities to augment sensor demand to detect, track and cue air and missile defense forces to defeat attacks. Even with all this capability, the Joint Force is still unable to meet the Combatant Commanders' (CCDRs) demands for AMD capability against an ever-growing and more accurate and lethal threat. The bottom-line is that our adversaries enjoy greater attack capability than the United States can defend against; hence the necessity to prioritize critical assets and the defended assets AMD forces protect.

The Army deploys a significant AMD capability - PATRIOT (PAC-3) battalions, Counter Rocket, Artillery, and Mortars / Avenger battalions, Joint Tactical Air-Ground Systems (JTAGS), and AN/TPY-2 sensors - to provide Joint Force commanders with unique AMD capabilities, mainly greater lethality and responsiveness, to defeat most ballistic missiles. The two new AMD capabilities, THAAD and JLENS, offer enhanced detection, surveillance, tracking, and defeat capabilities against evolving advanced threats. JLENS will provide the first 360 degree surveillance and fire control platforms to integrate and synchronize joint AMD fires.

THAAD is designed to provide endo- and exo-atmospheric engagements against SRBM, MRBM, and IRBMs in the terminal phase.⁶ Specifically, THAAD can intercept

warheads that present a complex target set, meaning before the BM deploys countermeasures. THAAD comprises a fire control and communications system, interceptors, launchers and a radar. (Review Figure 1 below for the THAAD operational concept.) The THAAD interceptor uses hit-to-kill technology to destroy targets, and THAAD is the only weapon system that engages threat ballistic missiles at both endo- and exo-atmospheric altitudes. An endoatmospheric missile is one that remains within the earth's atmosphere, i.e., at an altitude below 100 kilometers. An exoatmospheric missile leaves the atmosphere.⁷ THAAD has proven to have a successful 100% hit-to-kill intercept capability since reengineering efforts began in 1999. The Army fielded its first two of nine planned THAAD batteries in 2009-10. (See Figure 2 for THAAD battery configuration.) The remaining batteries will be fielded through FY18.

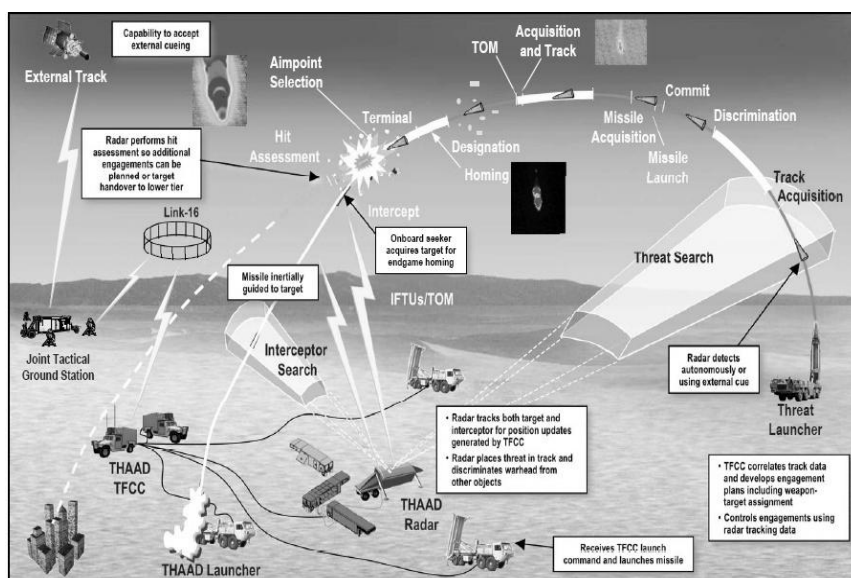


Figure 1: THAAD Operational Concept⁸

THAAD is designed to be a mobile AMD system. However due to its size and sensitivity of the critical components, namely the radar, for the purpose of this paper,

THAAD is recognized as a movable system vice mobile. The impact is that THAAD will have a more stationary footprint when employed.

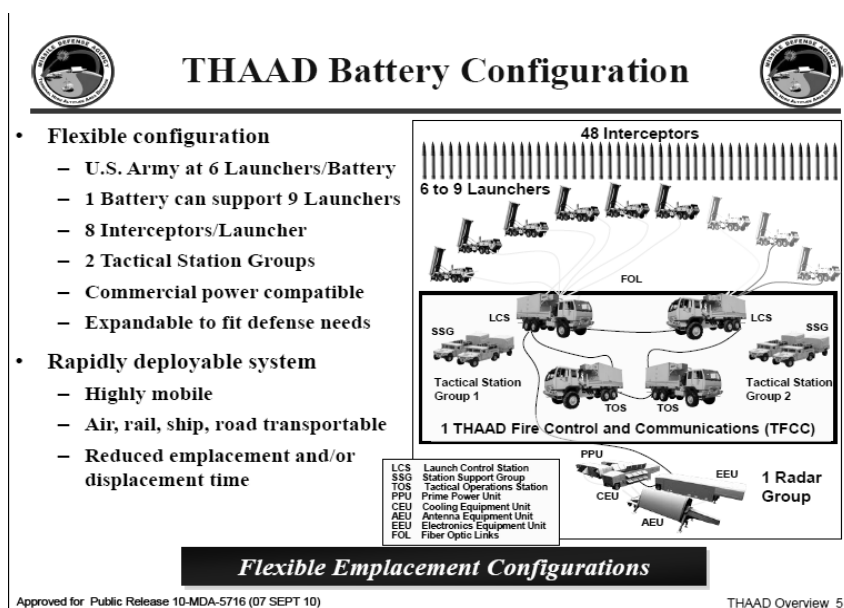


Figure 2: THAAD Battery⁹

JLENS is comprised of a dual aerostat-based, elevated surveillance and fire control sensor system. (See Figure 3: The JLENS Battery) JLENS enables effective long range/expanded battlespace defense against the land attack cruise missile threat and detects, tracks and reports air breathing threats, i.e. aircraft and Unmanned Aerial Systems (UAS), surface moving targets, and launch events for SRBMs and large caliber rockets (LCR).¹⁰ JLENS provides maneuver commanders over the horizon, 360 degree surveillance and advanced warning of aerial and ballistic threats. JLENS is in the final developmental testing phase and the Army plans to field in FY 13-18 a total of four JLENS batteries. JLENS is a movable system as well but is not mobile. It takes significant effort to reposition the JLENS system, so it is designed to operate for sustained periods in a stationary location.

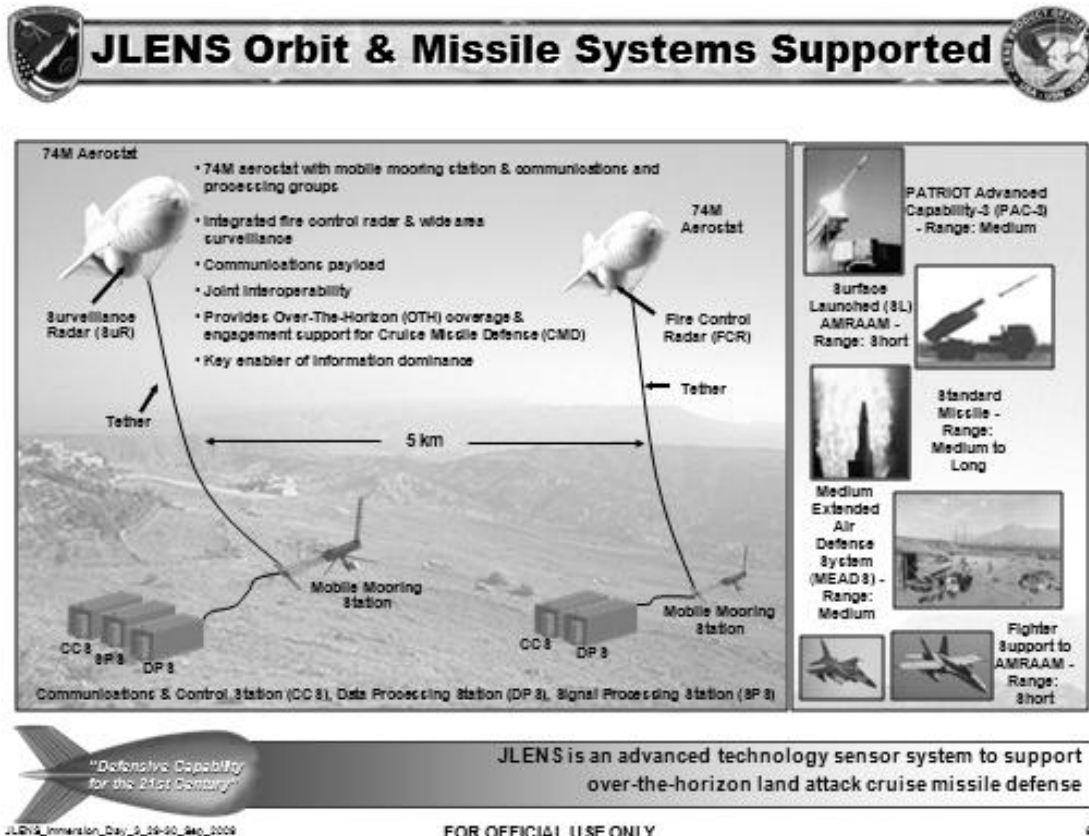


Figure 3: JLENS Battery

THAAD and JLENS are considered low density / high demand systems as the Army doesn't intend to procure many of each. Combatant Commanders have requested through Integrated Priority Lists (IPLs) or request for forces (RFF) the specific capabilities that THAAD and JLENS provide. With limited procured systems and significant capability demand, the Army must make concerted efforts to balance long term sustainability costs with meeting CCDRs' requirements. This is the decision the Army needs to make: how best to employ and/or deploy these unique capabilities.

Historical Context

At the end of Operation DESERT STORM, the Army maintained PATRIOT forces in Kuwait and Saudi Arabia to protect key embarkation nodes, airfields, and critical assets necessary to maintain a presence in the Middle East. The U.S. Army Air

Defense Center at Fort Bliss coordinated with Forces Command to continue the flow of PATRIOT units while simultaneously inactivating air defense units as part of the Army's downsizing. The majority of deploying PATRIOT battalions were filled at 70 percent strength because of the drawdown. During the 1990s, PATRIOT units experienced the second highest deployment tempo (DEPTempo) coupled with some of the lowest personnel tempo (PERSTEMPO).¹² This posed a difficult challenge for the Army as it often required personnel, reassigned hastily from one unit to another, to maintain the rotational deployment requirements by Central Command (CENTCOM). The constant deployments led to the departure of many Soldiers from the Army due to strain on families and troops.¹³ In 1994, with tensions in Northeast Asia increasing, the Army directed the deployment of a PATRIOT battalion to Korea. The Army continued that deployment and increased it to two battalions in 2002. These forces were rotational, deploying on an annual basis. Again, the constant rotations have led to a strain on the AMD force since extensive commitments have impacted retention.¹⁴

There were impacts to training and operational readiness as well. In 2000, there were 11 PATRIOT Battalions in the Army's inventory. During the first years of the 21st century, six battalions were committed to meet global missile defense demands. The remaining five battalions stationed at Fort Bliss were in a constant state of preparing for the next deployment rotation to Korea or Southwest Asia. Units, manned at less than 70 percent strength, went to the field for training with about 50 men vice the required 75 to adequately perform all battle drills to standard. Battalions identified for deployment were plussed-up with personnel prior to their rotation and had to return to the field to recertify PATRIOT Table VIII (Battery Intermediate Level Gunnery

Certification) because certified crews changed.¹⁵ Repeated certifications and rehearsals had a detrimental effect on morale even before the long separation of a year-long rotation. The Army recognized these stressors and began to make changes to global basing to alleviate the pressure.

As part of the Integrated Global Presence and Basing Strategy (IGPBS), the Army repositioned PATRIOT battalions to meet CCDRs' demand. In 2005, the Army was directed to provide a PATRIOT battalion to Japan, stationed on Okinawa. The 1st Battalion, 1st Air Defense Artillery deployed to Okinawa in summer 2006 and has maintained permanent forward presence ever since. This was the first complete unit move to include families. In 2008, General B.B. Bell, Commanding General United States Forces, Korea (USFK), briefed the Senate Armed Services Committee on his desire to normalize tours to three years as a sign of the U.S. commitment to South Korea.¹⁶ Previous construction efforts completed in 2009 allowed for the permanent restationing of 2-1 ADA including their families to South Korea. This forward basing has several positive outcomes. Operationally, it allows CCDRs to have AMD forces ready to respond to crisis and facilitates deterrence towards our adversaries. These recent basing decisions have enabled better training to support CCDRs as the units train on the locations where potential conflict can occur. For Soldiers and Families, forward basing allows families to remain together and promotes cultural exchanges with our allies and their population. It also saves on rotational costs with annual PCS moves for unaccompanied tours.

Historically, the Army has shown that over time rotational forces have had a detrimental impact on AMD forces. Conversely, decisions to forward base units to

achieve our national military strategy and alliance commitments have had numerous positive effects. As the Army begins to decide on employment / deployment options for THAAD and JLENS, it is important to assess the historic trends associated with contingency based, forward based, or rotational AMD forces.

Employment Courses of Action

The Army has three courses of action to employ these high demand/low density capabilities. Units can be permanently forward stationed in most likely threat regions, deployed on a rotational basis to threat hotspots, or placed in contingency status stationed within the Continental United States (CONUS). Using part of the force management model of Doctrine, Organization, Training, Materiel, Leader Development and Education, Personnel, Facilities, Risk and Cost (DOTMLPF-RC) as initial criteria, I selected Training (T), Personnel (P), Facilities (F), Risk (R) and Costs (C) for evaluation. The remaining force management model elements remain relatively constant across the three courses of action above. I have added deterrence effect (De) as a criterion to evaluate the COAs. The criteria are defined as the following: Training: Ability to effectively train forces to execute required employment tasks; Personnel: Minimize negative impacts on personnel and families; Facilities: Required facilities to perform missions for sustained operations and minimize contingency costs; Risk: Ability to achieve COCOM mission requirements with minimal adverse impacts; Cost: Least amount of initial and sustained costs to accomplish missions; and Deterrence Effect: Ability to persuade adversary not to destabilize region with ballistic missile attacks.

Forward Presence

Forward Presence is a significant aspect of our national security strategy.¹⁷ The AMD forces deployed to Korea, Japan, and Europe are permanently forward stationed units as part of our global deterrence mission and provide assurance to our allies and partners. The units are assigned to their respective Theater Army and conduct operations in coordination with their CCDRs.

Units forward based are disadvantaged when it comes to training space. Although Europe has a more open footprint, AMD forces are not always able to conduct the full range of training required to sustain trained and ready crews. Political restrictions in South Korea and Japan prevent AMD units from moving freely to conduct mission training. These units are limited to small training areas to conduct semi-annual gunnery tasks. THAAD and JLENS have substantial sized footprints for training due to the radars. The JLENS footprint alone is over five kilometers in separation for the two aerostats.¹⁸ Japan and South Korea do not possess the necessary land space for long term commitment of sustained U.S. presence of these unique AMD capabilities without adversely impacting the local population.

Soldiers assigned to forward stationed units are better prepared and focused on the AMD mission because the unit as a whole, to include their families, is forward. In South Korea, Japan, and Europe, operational and community facilities are already developed to accommodate currently stationed PATRIOT units. Certainly if THAAD or JLENS were stationed in these countries, they would enjoy many of the same conditions. The Army would bear additional costs for new operational buildings and increased costs for community support, i.e. housing, medical, and education for the

families that are stationed with the new units. However, to permanently forward station THAAD and JLENS to protect against threats in the Middle East requires the Army to build new facilities to accommodate a sustained presence. For JLENS, these locations might include Kuwait, Saudi Arabia or Qatar. For THAAD, possible locations for forward stationing could include Turkey, Georgia¹⁹, Poland, or an Eastern European nation. Each of these locations would require completely new facilities to be built to accommodate a complete unit. These are significant startup costs to ensure the Soldiers have permanent facilities to operate from and families have the quality of life that we normally provide to forward presence units. The start-up cost for 1-1 ADA in Okinawa was roughly \$24M to cover operations and maintenance facilities only. It did not include any housing and community support facilities as they were stationed with an existing U.S. facility on Kadena Air Base.

From an operational readiness perspective, forward presence is ideal as the unit is already positioned to meet its wartime mission requirements per CDR's CONPLAN/OPLANs. The units operate within their designated battlespace and are positioned to defend their assigned critical assets. The annual cost to maintain each battalion is roughly \$14 million to cover operations & maintenance.²⁰ There are additional costs to the Army for basing these forces to pay for building and land leases, utilities, and host-nation support. These annual costs range from \$2M in Germany to \$3-4M in Japan and South Korea.²¹ THAAD, forward stationed in Eastern Europe, Korea, or Japan, would provide immediate protection against SRBMs and MRBMs and enable flexibility for Combatant Commanders to reposition AMD forces elsewhere within his Area of Responsibility (AOR).

THAAD and JLENS deployed forward permanently places these critical systems at some risk to sabotage and strike if not well protected. Permanent stationing would require significant force protection of these systems from ground and air strikes in order for the AMD systems to be useful in times of crisis. The Army would incur additional costs to protect these assets with either ground forces or to contract private security.

Finally, there is the aspect of the deterrent value forward stationing provides. The deployment of THAAD and JLENS into PACOM or CENTCOM would send a definitive message to Iran, North Korea, and China, that the U.S. is fully prepared to defend its interests and willing to commit critical capability early to prevent our adversaries from seeking an advantage. The deployment of PATRIOT to our current hotspots along with growing host nation AMD capacity clearly demonstrates U.S. and partner nation resolve to counter ballistic missiles threat within the region.

Rotational

Rotational forces are stationed in CONUS and deploy on an annual basis to specific regions to deter threat adversaries per the current ARFORGEN model, 1:2 for AMD units. The AMD forces deployed to Southwest Asia in Kuwait, Qatar, Bahrain and UAE are considered rotational forces. The Army had deployed PATRIOT to South Korea on a rotational basis from 1994 to 2009. These rotations required the Army to maintain a high state of readiness for the CONUS-based units in order to prepare them for future deployments. In 2007, General B.B. Bell, as part of his overall plan to lengthen tours in Korea and stabilize units, decided that PATRIOT forces in South Korea would become permanently forward based. Rotational forces require additional force capability to sustain long term rotations. This places a considerable strain on

current AMD forces. It becomes even more challenging with low density/high demand capabilities like THAAD and JLENS.

The Army plans to field only nine THAAD batteries and four JLENS batteries. Using the 1:2 ARFORGEN model, the Army's planned inventory for THAAD means the Army can support only three THAAD deployments on a rotational basis. This is a limiting factor considering that MDA's current plan for European Phased Adaptive Approach (EPAA) could require up to three batteries to deploy if the planned use of the Navy's AEGIS SM-3 Block IIA system is not ready.²² Current Combatant Commanders in NORTHCOM, CENTCOM, and PACOM all desire the additional terminal defense capability that THAAD provides. Based on EPAA, this would leave no THAAD forces available for any other contingency or to meet other CCDRs' demands. For JLENS, the rotational model is even worse. On a 1:2 model, it means the Army can only support 1 battery deployed on a rotational basis, leaving only 1 battery for contingency operations.

Let's review rotation through the evaluation criteria lens. For training, deploying THAAD and JLENS requires two separate training areas. One training area would remain CONUS-based so that rotational forces would have a place to operate and train. The Army would need to build a training area, most likely at the deployed location, for THAAD and JLENS to train during their deployment. The crews will be required to maintain training proficiency, especially when deployed, so as to readily meet a threat. Costs estimates for establishing a rotational site are estimated at \$3-7M for each site. Multiple this factor by 3-4 sites and the Army has a significant cost requirement for a sustained commitment, along with annual consumption and rotational costs.

Rotations always have a negative impact on personnel, particularly in retention. If THAAD or JLENS were to move to a 1:1 dwell time rotation to meet current CCDRs' demand, this would have severe consequences for retention of critical military occupational specialties (MOSs). One of the key challenges of the 1990s PATRIOT rotations to SWA was the constant deployments. Often personnel and equipment from a returning unit would be reassigned to a deploying unit to fill shortages, further exacerbating retention issues.²³ THAAD and JLENS utilize highly specialized MOSs that require extensive training and to lose personnel due to constant rotations would certainly impact the Army's ability to meet sustained operational readiness.

A clear advantage for rotational forces comes in the operational readiness realm. Barring rotating equipment to and from CONUS and using the current ARFORGEN model of falling in on prepositioned equipment, rotational units have the advantage of having their equipment ready for immediate employment. Rotating THAAD and JLENS personnel can train on home station equipment and then conduct battle handover (right seat rides) once in theater with the outgoing unit on emplaced systems. Over time, the equipment will require a rotation as well, to refit and update critical system components, but that can be coordinated and planned well in advance.

From a costs perspective, the Army would incur many of the initial startup costs for new operational facilities in Eastern Europe and the Middle East for THAAD and JLENS as stated in the forward presence COA above. Additionally, the Army incurs further operational costs due to personnel rotations on an annual basis.

As with any rotating force, risk is incurred early in a rotation especially during transition. THAAD and JLENS are highly technical systems that require crews ready to

conduct operations immediately. The new unit is learning the operational environment and new battle rhythm to ensure proper readiness. Towards the end of a rotation, units tend to be more complacent as they prepare for departure and eagerly conduct handover to their replacements. Our adversaries will have visibility on rotating forces and could seek an advantage during transition.

The commitment of THAAD and JLENS on a rotational basis sends a similar message to our adversaries about our resolve. Rotational deployment of THAAD and JLENS demonstrates to our adversaries and allies alike that the U.S. remains committed to stability in both CENTCOM and PACOM AORs. Similar deterrent value for forward presence units is applicable to rotating THAAD and JLENS annually.

Contingency

Contingency based forces remain in CONUS and deploy in support of a CDR's request for forces in support of a crisis or as part of a CONPLAN/OPLAN. These are temporary deployments after which the forces return to CONUS. Like rotational forces, contingency based forces have many of the same advantages and disadvantages when it comes to training, personnel retention, and operational readiness. However, there are a couple of disadvantages that must be considered.

The most significant disadvantage with contingency-based forces is the cost associated with deploying a unit to deter an adversary or support a CDR's exercise. To deploy a THAAD battery in response to crisis costs millions of dollars for the transportation, contractor support, personnel deployment, etc. It took 15 C-17 sorties to deploy a THAAD battery (-) in support of EUCOM's JUNIPER COBRA exercise in Fall, 2010 at a rough cost of \$14 million.²⁴ Deployment costs will be the largest driver for a

contingency based force. However, these costs are much less than forward based or rotational forces.

Additionally, the Army must review the United States Transportation Command's (USTRANSCOM) ability to rapidly generate heavy airlift sorties (C-5B Galaxy or C-17 Globemaster III) to deploy a contingency based force. Combatant Commander's requests for AMD forces usually respond to an immediate crisis or ballistic missile threat, therefore the Army must factor how best to deploy. Airlift is the normal mode of rapid response. The USAF maintains a fleet of 205 x C-17s and 112 x C-5B/Ms; however as new C-17s are produced, the USAF plans to retire C-5s. Air Mobility Command, subordinate command to USTRANSCOM, maintains the heavy airlift force and has global commitments to move men and materiel. In the event of a crisis, the Army and the requesting CCDR would need to justify reprioritizing heavy airlift to move minimum engagement packages (MEPs) into theater. This delays the deployment of other high priority assets to meet theater requirements. There is sufficient heavy airlift to meet a contingency based force deployment requirement; however these are very expensive deployment options. If time allows, the Army could offset costs by using Military Sealift Command ships to deploy complete battery packages to respond to crisis. The long transit times for sea movement may make this an untenable option for CCDRs.

Like rotational forces, retaining THAAD and JLENS within CONUS may demonstrate to our allies a lack of commitment and strengthen our adversaries' resolve to challenge the U.S. regionally. Knowing that it would take time to deploy a contingency based force to meet a crisis, Iran, North Korea, Syria, or China may seek opportunities

to broaden their relationships with our regional partners if the U.S. creates a void due to lack of presence. It would be imperative for the U.S. to exercise with our regional allies with contingency based forces on a routine basis much as the U.S. did with REFORGER exercises in the 1970s and 80s, to demonstrate our ability to respond to crisis and commitment to regional defense.

Analysis Summary

Based on the above analysis in a simple quantitative format (See Figure 4), contingency based forces may be the best option to station and deploy new air and missile defense capabilities. CONUS based forces allow the Army to train THAAD and JLENS units to meet all operational training requirements prior to a deployment. This ensures that these units are ready to respond and deploy to meet theater crises. More importantly it provides policy makers multiple options to respond to crisis or meet CCDRs' security cooperation requirements. Considering how close contingency based and forward presence courses of action are in the analysis, the Army may consider a combined approach as more capability is developed over time. However, I think the future will feature more forces returning to CONUS to save money and become a contingency based force.

	Training	Personnel	Facilities	Risk	Cost	Deterrence Effect	Total			
COA 1: Forward Presence	1	2	2	3	2	3	13			
COA 2: Rotational	2	1	1	2	1	2	9			
COA 3: Contingency Based	3	3	3	1	3	1	14			
	Training: Ability to effectively train forces to execute required employment tasks									
	Personnel: Minimize negative impacts on personnel and families									
	Facilities: Required facilities to perform missions for sustained operations and minimize contingency costs									
	Risk: Ability to achieve COCOM mission requirements with minimal adverse impacts									
	Cost: Least amount of sustained costs to accomplish missions									
	Deterrence Effect: Ability to persuade adversary not to destabilize region with ballistic missile attacks									
	Highest number is best COA									
	COA:3									

Figure 4: COA Comparison

Recommendations

The Army should retain new AMD forces in contingency based force packages within CONUS able to respond to CCDRs' requests. The Army has selected two locations to initially field THAAD and JLENS. Currently, there are plans to station the first three THAAD batteries at Fort Bliss, Texas and an additional two at Fort Hood, Texas. The infrastructure costs associated with establishing these capabilities is \$65 million and \$38 million respectfully.²⁵ THAAD Batteries 6-9 stationing options have not been established; however as resources become available, other CONUS based options should be considered. For JLENS, the Army has programmed \$124M for initial infrastructure and operational costs at Fort Bliss. Additionally, the Army has programmed \$75M for institutional support training at Fort Sill, Oklahoma.²⁶ JLENS battery #4 stationing option has not been established either. Fort Sill should be a leading candidate as the post possesses the necessary land and airspace to operate the JLENS system. The Army should consider expanding its operational unit AMD footprint to include Fort Sill since the majority of AMD training is conducted there. Fort Sill offers another power projection platform from which a rotational unit can deploy rapidly. Fort Sill, home to the Air Defense Artillery School (USAADASCH), provides world class training facilities to train additional forces and deploy them with rotational equipment.

Each base has the requisite force projection platforms to rapidly deploy THAAD and JLENS to meet regional crisis. Retaining these forces in CONUS enables sustained training to include live fire to meet all training requirements. Sustainment training is enhanced by having maneuver space to deploy and train locally. There are

minimal maneuver constraints to training within CONUS especially at Fort Bliss, Texas, Fort Hood, Texas, and Fort Sill, Oklahoma. Another option is to base a THAAD battery on Kauai assigned to the 94th Army Air and Missile Defense Command on Oahu to provide a contingency capability a little more forward than CONUS. This offers the Army the ability to continue testing and development as technology matures.

CONUS based units enjoy better personnel retention as families accompany the Soldier to his duty station. The constant demand for rotational units has an adverse effect on retention and readiness. The Army will not procure significant numbers of THAAD and JLENS to maintain a viable rotational force without adverse effect on retention, Soldiers, and Families. By keeping THAAD and JLENS CONUS based, the Army lowers costs for permanent and very expensive facilities costs in regional areas. CCDRs do assume operational risk by not having deployed AMD forces permanently in position to support OPLANS/CONPLANS. However, the Army is better positioned to support regional crises with maximum capability with contingency based THAAD and JLENS.

Good indications and warnings provide CCDRs and the Army time to respond to adversarial use of ballistic missiles. The knowledge that the United States is prepared both offensively and defensively to respond to crisis is the deterrent value to counter an aggressor's actions. CCDRs' Tier 1 exercises with THAAD and JLENS integrated into their programs should provide the necessary signal that the United States is prepared with adequate capability to defend its deployed forces, allies, and partners. Contingency based forces enable the Army to support any CCDR with necessary capability to meet its CONPLANS and defend our forces.

Permanently deploying THAAD and JLENS, either forward based or rotational, narrows our focus on only two regional threats and limits the Army from responding to crises as they arise. Our current focus remains on North Korea and Iran; however, the United States cannot ignore the growing military strength of China, Russia, India and soon others. Each country has robust ballistic missile capabilities that can put U.S. forces in jeopardy. Forward basing is possible but requires establishing new facilities for units that support Families, which are very expensive. It would require deploying units and Families in potentially dangerous areas within the Middle East and Eastern Europe. This can have a negative effect on the units and impact operational success.

There is risk to contingency based forces assigned to CONUS. The volatility within a region could spark a ballistic missile attack with little warning or defensive preparation. By not maintaining forward BMD presence, our deployed U.S. forces are at greater risk to surprise attack. It may also send the wrong message to our partners and allies on our commitment to their defense. Building and maintaining strategic relationships is a cornerstone of our National Military Strategy and deployment of AMD forces to the region sends a clear message.

There are a couple alternatives the Army should consider. The Army could use a mix of stationing options over time. It is possible to start with contingency based forces from CONUS ready to respond to crisis. If a crisis occurs, the Army could use rotational forces for a short time but again, due to low density, this is not a tenable option for sustained commitment. As fiscal resources become more available transition to permanent forward presence locations will enhance our security commitment abroad and assure our allies and partners. This has several advantages. First, it allows the

development of partners' capabilities through integrated exercises. It preserves our most capable missile defense systems in the event of a crisis such as imminent threats in the Middle East or on the Korean peninsula. This option provides policy makers with options to build capacity and still provide a credible responsive force to deter aggression. As the U.S. fields additional systems, transitioning to forward based may be a preferred option to defend as far forward to maintain deterrence, prepared to defeat attacks by our adversaries.

The Army could establish "warm basing" development projects that build semi-permanent facilities with electrical and communications requirements in place that a deploying AMD force could occupy in the event of a crisis. Warm basing provides a visible presence to our adversaries that we will respond to threats and reassure allies and partners that we will assist in their security when they feel threatened. This will add onto the Army's overall cost for these programs but provide a means to rapidly transition to meet a crisis without the exorbitant costs of forward basing AMD capabilities.

The United States can mitigate risk by partnering with regional states to build active defense capabilities, particularly THAAD, JLENS, and PATRIOT to enable our partners and allies to provide their own protection. The Joint Force will provide capabilities to deter aggression and assure our allies and partners through our nuclear arsenal and overseas missile defense capabilities. The NMS describes a key tenet of U.S missile defense policy as "we will continue to lead in advancing Ballistic Missile defense capabilities against limited attacks and we seek opportunities for cooperation with allies and partners in this area."²⁷ This assists with risk mitigation in the near-term and enables U.S. strategic repositioning of AMD forces as allies are better able to

defend themselves. The United States has made significant contributions to Japan, Kuwait, Qatar, and United Arab Emirates to strengthen their active defenses. Just recently, the U.S. agreed to sell \$7 billion worth of AMD capabilities to UAE²⁸ and a \$60B package of U.S equipment to Saudi Arabia. THAAD and JLENS provides another layered capability for regional partners to deter North Korea, Iran, and Syria.

In conclusion, the Army must strongly consider keeping new AMD forces CONUS-based and contingency ready. The positive impact on operational readiness, training, and personnel retention outweighs the disadvantages associated with a rotational or forward stationed force. The United States maintains preeminent air and missile defense capabilities and as a global power retains the means to rapidly respond to any crisis. Keeping AMD forces in CONUS provides policy makers options to deploy this unique capability anywhere on earth, ready to defend U.S. forces, our allies and partners, and critical assets against any aggressor nation's use of ballistic missiles and aerial platforms.

Endnotes

¹ Robert M. Gates, *Ballistic Missile Defense Review Report (BMDRR)*, (Washington, D.C: Office of the Secretary of Defense, February 2010), i.

² Michael G. Mullen, Admiral, *The National Military Strategy of the United States of America (NMS)*, (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, February 2011), 4.

³ Gates, *BMDRR*, 5.

⁴ Mullen, *NMS*, 8.

⁵ Gates, *BMDRR*, 7.

⁶ Fires Center of Excellence, *Terminal High Altitude Area Defense (THAAD) Block 5 Concept of Operations (CONOPS)*, (Fort Sill, OK: Capabilities Development and Integration Directorate (CDID), December 10, 2009), i.

⁷ Pierre Tristam, "Why is the United States Selling Ballistic Missile Technology to UAE?," June 26, 2010, <http://middleeast.about.com/b/2010/06/26/thaad-missiles-uae.htm> (accessed February 4, 2011).

⁸ Fires Center of Excellence, *CDID Overview Brief*, (Fort Sill, Oklahoma: Capabilities Development and Integration Directorate, September 09, 2009), 68.

⁹ Missile Defense Agency, *THAAD Overview Brief*, (Washington, DC: Missile Defense Agency, September 7, 2010), 5.

¹⁰ LTC Stephen Wilhelm, "Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)", briefing given at Integrated Air and Missile Defense Immersion Day, Fort Sill, Oklahoma, September 30, 2009.

¹¹ Ibid., 5.

¹² BG Kevin T. Campbell, "Exit Interview," interview by Patricia M. Rhodes, Command Historian, Office of Chief of Air Defense Artillery, Fort Bliss, Texas, June 8, 2000, 6.

¹³ Michael Sisley, email message to the author, December 18, 2010. Former CPT Michael Sisley, served as a Patriot Tactical Control Officer in 2-43 ADA, offered his insights on the personnel turmoil of the Air Defense Artillery community in the late 1990s.

¹⁴ John A. Hamilton, *Blazing Skies*, (Fort Bliss, Texas: Office of the Chief of Air Defense Artillery, 2009), 318.

¹⁵ Campbell, "Exit Interview," 5-6.

¹⁶ GEN Buell B. Bell, "Testimony to the Senate Armed Services Committee," (March 11, 2008), 35-38. General Bell provided his assessment of the long standing commitment of the United States-Republic of Korea relationship. This included recommendations for continued funding of future military housing and construction projects that enabled normalizing three year tours just as we commit to Japan and Europe.

¹⁷ Barack Obama, *National Security Strategy*, (Washington, DC: The White House, May 2010), 41.

¹⁸ Wilhelm, "JLENS," 13.

¹⁹ Civil.Ge Home Page, <http://www.civil.ge>, "Call for Missile Defense Radar in Georgia," February 4, 2011, <http://www.civil.ge/eng/article.php?id=23110> (accessed February 6, 2011).

²⁰ LTC Edward J. O'Neill, *1-1 Air Defense Artillery Annual Budget Report, 2007-2009*, (Fort Shafter, Hawaii: 94th Army Air and Missile Defense Command, October 01, 2007), 6.

²¹ COL Robert Waltemeyer, "Garrison Commander Update Brief," briefing given at Torii Station, Okinawa, Japan, December 2008. Presenter gave this update to the 10th Support Group Commander and supporting battalion commanders to highlight costs associated with each unit's installation functions.

²² LTG Patrick J. O'Reilly, "Phased Adaptive Approach Overview for The Atlantic Council," October 12, 2010, <http://www.acus.org/files/ISP/Atlantic%20Council.Final.O'Reilly.presentation.pdf> (accessed February 7, 2011).

²³ Campbell, "Exit Interview," 5; John Hamilton, *Blazing Skies*, 317-318.

²⁴ Jeffrey Greer, e-mail message to author, February 11, 2011. Though not fully vetted and approved by the Army, these cost figures are based on a recent exercise, JUNIPER COBRA conducting in the Fall 2010. They are illustrative of potential costs the Army should account in determining final basing cost options.

²⁵ Michael Bearce, e-mail message to author, February 22, 2011. Document provided by TRADOC Capabilities Manager – Army Air and Missile Defense, Fort Sill, Oklahoma, titled "Army Military Construction Memorandum," August 25, 2010, defined the approved budget submission by the U.S. Army for new military construction for THAAD and JLENS.

²⁶ Timothy J. Neely, email to the author, February 23, 2011. Document provided by TRADOC Capabilities Manager-ADA Brigade, Fort Sill, Oklahoma, titled "Army Decision Point 128 (DP-128)," August 2010. As part of the Army Campaign Plan, the Army Staff developed a series of Decision Points for the Army's Senior Leadership to address. DP-128 was directed for implementation by the Vice Chief of Staff of the Army, General Pete W. Chiarelli in August 2010.

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